

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended)      A processing device, comprising:  
an input interface ~~for receiving~~ to receive data units containing header information of respective packets;  
a first module ~~configurable~~ including a user-configured filter rule to perform packet filtering based on the received data units, the first module to mark a packet for sampling by setting a bit in a packet notification when the packet matches the filter rule;  
and  
a second module ~~configurable~~ to perform traffic analysis based on the received data units, the second module to generate a random number and sample the marked packet when the random number is less than a predetermined threshold[(:)]  
~~a third module configurable to perform load balancing based on the received data units; and~~  
~~a fourth module configurable to perform route lookups based on the received data units.~~
2. (currently amended)      The processing device of claim 1, wherein the processing device is implemented as an Application-Specific ~~Specification~~ Integrated Circuit (ASIC).
3. (currently amended)      The processing device of claim 2, wherein the traffic analysis performed by the second module includes at least one of ~~sampling~~, logging[[,]] or counting.

4. (currently amended) The processing device of claim 1, the header information comprising at least one of a source Internet protocol (IP) address, a destination IP address, an IP type, a source port, a destination port, a differentiated service (DiffServ) byte, an IP fragmentation offset field, an IP fragmentation control field, or a transmission control protocol (TCP) control bit, and wherein ~~the first module is configured to perform~~ the packet filtering is based on the header information.

5. (currently amended) The processing device of claim 1, ~~wherein the first module includes a user-configured filter rule~~ further comprising:  
a third module to perform load balancing based on the received data units.

6. (currently amended) The processing device of claim [[5]] 1, ~~wherein when a packet matches the filter rule, the first module is configured to:~~  
accept the marked packet;  
discard the marked packet; or  
reject the marked packet and transmit an Internet control message protocol (ICMP) message.

7. (currently amended) The processing device of claim [[5]] 1, the packet filtering ~~performed by the first module~~ comprising accepting [[a]] an unmarked packet [[that]] when the unmarked packet is not ~~explicitly~~ rejected based on the filter rule.

8 and 9. (canceled)

10. (currently amended) The processing device of claim [[8]] 1, the second module ~~being configure~~ to write the header information associated with the sampled packet to a routing engine of the processing device.

11. (currently amended) The processing device of claim 1, the second module ~~being configured~~ to monitor:

all logical interfaces associated with the processing device;  
designated logical interfaces associated with the processing device;  
designated protocols;  
a range of addresses; or  
individual addresses.

12. (currently amended) The processing device of claim [[3]] 1, wherein the packet ~~performed by the second module may be~~ filtering is used to determine respective destinations of the packets, a volume of the packets, and respective contents of the packets.

13. (currently amended) The processing device of claim [[5]] 1, ~~wherein when a packet matches the filter rule, the second module is configured~~ to log the marked packet, a log entry associated with the logged packet being accessible for display by using a command-line interface associated with the processing device, the log entry including at least one of a log time, an input circuit, a protocol type, a source address, or [[the]] a destination address.

14. (currently amended) The processing device of claim 3, at least one of the ~~second module being configured to perform the~~ sampling, logging, or counting being performed at a speed of about OC-192c/STM-64.

15. (previously presented) The processing device of claim 1, wherein the packet filtering performed by the first module comprises performing source address verification to prevent source address spoofing of a network operation center (NOC) system.

16. (previously presented) The processing device of claim 1, the processing device further comprising a loopback interface, wherein the first module is associated with the loopback interface.

17. (currently amended) The processing device of claim ~~[[1]]~~ 5, the load balancing performed by the third module comprising forwarding packets received from a designated source port or a designated source address to a designated destination port or a designated destination address.

18. (previously presented) The processing device of claim 17, the forwarding of the packets from the designated source port or the designated source address to the designated destination port or the designated destination address maintains an order and a travel path for a TCP session associated with the forwarded packets.

19. (currently amended) ~~The processing A network device of claim 1, the load balancing performed by the third module~~ comprising:

an input interface to receive a packet; and

a load balancer to:

~~accepting a~~ accept the received packet when the received packet is determined to be in-profile, a first drop precedence being assigned to the in-profile accepted packet;

~~dropping drop~~ the received packet when the received packet is determined to be out-of-profile; or

~~accepting accept~~ the received packet when the received packet is determined to be out-of-profile and ~~marking mark~~ the accepted packet as out-of-profile, a second drop precedence being assigned to the out-of-profile accepted packet.

20. (canceled)

21. (currently amended) The ~~processing network~~ device of claim ~~[[20]]~~ 19, ~~the third module being configured~~ load balancer to use a random early detection (RED) algorithm for queue management of the accepted packets packet based on the first drop precedence ~~[[and]]~~ or the second drop precedence.

22. (currently amended) The ~~processing network~~ device of claim ~~[[1]]~~ 19, the load balancing performed by the ~~third module comprising assigning balancer to assign a respective~~ policing equivalence classes (~~PECs~~) class (PEC) to the ~~packets received packet~~.

23. (currently amended) The ~~processing network~~ device of claim ~~[[21]]~~ 22, the ~~third module being configured~~ load balancer to determine an average bandwidth and a maximum burst associated with ~~[[each]]~~ the assigned PEC.

24. (currently amended) A method of forwarding data packets using an application-specific integrated circuit (ASIC)-based processor, comprising:  
receiving a packet including a header;  
filtering the received packet based on the header to accept or reject the received packet;  
performing traffic analysis on the accepted packet, including randomized sampling based on a user-configurable sampling rate of one divided by a user-specified integer;  
performing a route lookup for the accepted packet; and  
forwarding the accepted packet based on the route lookup.

25. (currently amended) The method of claim 24, further comprising:  
writing a filter rule into the ASIC-based processor prior to the filtering of the received packet.

26. (previously presented) The method of claim 25, the filtering comprising accepting the received packet when the filter rule does not explicitly reject the received packet.

27. (canceled)

28. (currently amended) The method of claim ~~[[27]]~~ 24, ~~wherein the user-configurable sampling rate is defined as one divided by a user-specified integer~~; the method further comprising:

- generating a random number;
- comparing the user-configurable sampling rate to the generated random number to form a resulting value; and
- performing the sampling when the resulting value is less than the user-configurable sampling rate.

29. (currently amended) An application-specific integrated circuit (ASIC)-based filter for use in a router, comprising:

- means for downloading a user-configured filter rule;
- means for applying the filter rule to a packet received by the router;
- means for accepting the packet when the packet is not explicitly rejected by the filter rule; ~~[[and]]~~
  - means for generating a random number;
  - means for marking the accepted packet for sampling when the random number is less than a predetermined threshold; and
  - means for determining whether the packet is to be further processed by the router based on a result of the applying the filter rule, the ASIC-based filter being configured to perform independently of other processes being performed by the router.

30. (currently amended) The ASIC-based filter of claim 30, further comprising:

- means for discarding the packet that arrives on an inbound circuit when the packet contains a spoofed network operation center (NOC) source address.